

# dxDAO: Toward super-scalable organizations

April 30, 2019

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## Abstract

The degree of decentralization in any system encompasses not only its technical architecture, but extends to system governance itself. Today, there is a clear need for decentralized governance of decentralized software protocols. Responding to this need, the dxDAO is a next-generation decentralized autonomous organization (DAO) for community governance of software protocols.

The idea for the dxDAO initially arose from Gnosis' design and development of a permissionless trading protocol, the DutchX. The DutchX employs the Dutch auction mechanism, enabling the exchange of ERC20 tokens with fairer, uniform clearing prices. The DutchX proved its viability as critical infrastructure for decentralized finance (DeFi) applications, providing an on-chain price oracle and facilitating large volume trades without slippage. To support community governance, upgradeability, and the network effects necessary for the DutchX, it became clear a governance mechanism such as the dxDAO would be essential.

The dxDAO is built on DAOstack's framework for organizations. Their governance framework enables groups to make a high quantity of decisions without giving a potential malicious subgroup the ability to sway those decisions against the best interests of the overall group, balancing efficiency with resilience for highly scalable organizations.

Governance of the DutchX, however, is a start point not an endpoint. The dxDAO may choose to fill a crucial gap in web 3.0 governance. Its lifelong trajectory will ultimately be decided by what community stakeholders deem to be the most valuable pursuits.

The dxDAO will be initialized May 29, 2019.

## 1 Contributors

Gnosis and DAOstack Teams

## 2 Word Usage

Words appearing in title case in the body of the text are defined in the Glossary in section 9 of the whitepaper.

## 3 Context

In 2019, the term DAO needs refinement.

Most synonymous with The DAO experiment in 2016, decentralized autonomous organizations suggest a software protocol both immutable and independent from its creators. However, what we may need most today are open, adaptable tools for human coordination, which work at scale and with collective control.

Many might be familiar with the phrase software is eating the world, or a more recent reprisal for markets. In either case, the world in question features increasingly complex entanglements of agents and incentives that shape our collective experience.

As their reach extends globally, the need to understand and govern such complex systems only grows. In recent history, nation states, private firms, and market forces have been the most visible forms both for governing complex systems and coordinating humans to imagine, build, and maintain them. However, coordinating a large group of people around interests or aims still faces significant challenges and perils.

For example, private firms are considered one of the most successful constructs for organizations, able to coordinate millions of people across the globe to achieve their goals. However, it is widely understood that firms have limited scalability. Doubling a firm's resources, in capital or contractors, does not double its ability to make "good decisions." In fact, often additional resources proportionally increase a firm's overhead costs and cause subsequent losses in efficiency.

In this light, DAOs create a new design space for organizing globally.

We believe that within this design space, we can establish not only scalable but super-scalable organizations, meaning that such an organization's ability to efficiently coordinate actually *increases* as it grows. Super-scalable organizations would propagate network effects in their ability to make "good decisions."

The dxDAO is a first attempt to create such an organization. While its scalability in part derives from organizational rules embedded in executable smart contracts, its enhanced scalability lies primarily in its governance framework, the Genesis Protocol implementing Holographic Consensus invented by DAOStack Ltd (“DAOStack”). Novel characteristics of such an organization are:

**No hierarchies.** While different stakeholders in the dxDAO can have different degrees of influence or voting power, there are no hierarchies or special roles.

**Complete transparency.** Decisions are documented in public. Furthermore, without special roles, there are no codified information asymmetries within the organization.

**Open for outside contributions.** The dxDAO is permissionless, meaning it incorporates mechanisms and incentives to invite wider participation, expertise, and stakeholderhood in the dxDAO’s endeavors.

**Use market mechanisms.** Open markets coordinate stakeholders both with common and adversarial interests to achieve goals together.

**Guide collective attention.** The governance framework uses incentive design to guide an organization’s focus toward decisions members signal matter most.

Super-scalable organizations, however, are not defined by quantity of members. They can be defined as organizations which provide feedback mechanisms to steer toward quality decisions at any scale, allowing their members to achieve both modest tasks and megaprojects alike. While many liken DAOs to improvements on traditional firms or cooperatives, we believe that DAOs introduce an inherently new type of organization, more akin to MMORPGs than other types of formally recognized organizations that have come before.

While the need for governance of complex, human-created systems is pressing, we also face the need to better understand and steward systems we inherit. The dxDAO is a novel, yet humble experiment toward the ends of human coordination amidst disparate goals. We hope that it is one of many such experiments, toward the aim of cooperatively facing common crises of stewardship on a more global level.

The dxDAO launch is planned for May 29, 2019. To follow its progress:

Vote Staking interface: <https://dxdao.daostack.io>

Telegram group: <https://t.me/dxdao>

Forum: <https://daotalk.org>

Twitter: #dxDAO

## 4 Governance Protocol

### 4.1 Holographic Consensus

The dxDAO will use the DAOStack’s Genesis Protocol for decision making. The Genesis Protocol employs Holographic Consensus which posits that organizations can become more efficient as they scale. Within this protocol, in a specific DAO:

1. Anyone can submit a proposal (such as proposing any arbitrary Ethereum transaction) at any time.
2. Regular proposals will be executed if they receive an absolute majority, that is, if greater than 50% of all Reputation, across Reputation Holders, votes in favor of the proposal within a specific time frame.
3. Proposals can be “boosted” via a Prediction Challenge in which GEN holders predict whether or not a given proposal will be accepted. If a proposal is boosted, it will be accepted if it receives a relative majority, that is, more Reputation votes in favor of the proposal than against it. This means that Boosted Proposals have a lower barrier to being accepted than non-boosted proposals. For specific parameters on Boosted Proposals in the dxDAO, see section 4.4.6.

The goal of Holographic Consensus is to facilitate decision making processes for large groups (1000+ stakeholders). To do so effectively, Holographic Consensus is designed to process a high volume of decisions, while protecting against a proposal not aligned with the values of the majority being accepted. In this way, it balances efficiency and resiliency. It provides meaningful control to the dxDAO Stakeholders with regard to decision making and execution within the dxDAO.

The dxDAO governance framework privileges majority votes. In other words, a decision is always considered “right” if greater than 50% of total Reputation votes in favor of it. Furthermore, Holographic Consensus acknowledges that governance comes at a cost, and thus it assumes that DAOs will contribute financially to their own governance by subsidizing the Prediction Challenge used to boost proposals. For this reason, the dxDAO will eventually need a continuous stream of income to be sustainable in the long term (see section 7).

A system that always accepts relative majorities is in danger of being spammed by a single Reputation Holder, leading to a situation where the true majority must continuously counter-vote these proposals.

For this reason, those who boost “bad” or majority-unaligned proposals should pay a cost, which is guaranteed by the Prediction Challenge. In the Prediction Challenge, predictors have to stake that—if boosted—a proposal will be accepted by vote. If a bad proposal is boosted, it creates an incentive to predict against it and make a profit by winning the Prediction Challenge.

In cases where a “good” or majority-aligned proposal is boosted, and no predictors are predicting against the proposal, the DAO itself will always play the role of the counterparty (predict against any proposal) to ensure correct predictions are rewarded.

## 4.2 Roles

### 4.2.1 Proposer

Proposers are those who submit a proposal to the dxDAO. Anyone can take part as a Proposer without possessing Reputation (voting power). The dxDAO will allocate Proposers of accepted proposals Reputation, initially according to Holographic Consensus’ automatic allocation of Reputation (see section 4.3).

### 4.2.2 Predictor

Predictors are those who participate in the Prediction Challenge, thereby filtering proposals and directing the attention of Reputation Holders to proposals that are in line with the majority values of the dxDAO. Predictors are driven by making profits from the Governance Subsidy or from other participants that make incorrect predictions. Anyone who holds the native DAOstack token GEN can make predictions; having Reputation is not necessary to participate in the Prediction Challenge. Note that the dxDAO will start with some amount of GEN funding in its Governance Subsidy, since 10% of the total Reputation will be auctioned off for GEN.

### 4.2.3 Reputation Holder

Reputation Holders are any person whose Ethereum wallet address contains an amount of Reputation. The more Reputation held, the greater one’s voting power. The voting power of each Reputation Holder is weighted by this amount in proportion to the overall amount of Reputation (1 million at the start). While Reputation is non-transferable, the dxDAO can decide to award or subtract Reputation through the proposal submission mechanism, initially according to Holographic Consensus’ automatic allocation of Reputation (see section 4.3).

## 4.3 Further Reputation Distribution

Note that the 30-day Vote Staking Period is the only instance of initial Reputation distribution. But there are two other ways after the Vote Staking Period where Reputation can be created or allocated. The first are “manual Reputation flows.” In this case, dxDAO proposals can dictate ways to mint and distribute additional Reputation (e.g. via another Vote Staking Period). The second are “automatic Reputation flows,” which are designed to passively reward active participation in governance processes. For instance, putting forth a proposal Reputation Holders accept results in a reward of Reputation. The automatic Reputation flows are illustrated below.

User Action	Proposal Outcome	Proposal Passes	Proposal Fails
<b>Manual Reputation Flow</b>			
Be named the awardee of a proposal's Reputation reward / penalty		Reputation reward or penalty named in the proposal (any size)	∅
<b>Automatic Reputation Flow</b>			
Submit a proposal		Reputation reward set by parameter	∅
Vote "yes" on a non-boosted proposal		Reputation reward set by parameter	Reputation penalty set by parameter
Vote "no" on a non-boosted proposal		Reputation penalty set by parameter	Reputation reward set by parameter

The Alchemy Earth interface featuring all three initial dxDAO schemes.

## 4.4 Governance Parameters

### 4.4.1 What are Schemes?

In the Genesis Protocol, schemes define the functionality of a DAO. Each scheme allows a DAO to do specific actions under specific conditions, and are visible as a category of action on the interface. Most schemes are based on type of proposals, e.g. a proposition to trigger some of the basic actions of a specific application. Such proposals will be voted on with yes or no and possibly be approved, resulting either in the automatic execution of the proposal, assigning permissions to execute the proposal, or allocating funds to execute the proposal. A proposal could include the proposition of adding a new scheme to a DAO, which could result in registering (assigning ownership permissions to) the new scheme.

### 4.4.2 dxDAO Schemes

Initially, there are three schemes built into the dxDAO. Respectively, these three schemes manage the (1) process of distributing rewards ("Contribution Reward" on the interface) (2) DutchX trading protocol ("DutchX" on the interface), and (3) administration of the DAO itself ("DAO Admin" on the interface). Each specifies potential actions and parameters that can be changed within their scope. All of these schemes use Holographic Consensus (see section 4.1) mechanisms, although with slightly different parameter variables.

### 4.4.3 Stewardship of granting awards (Contribution Reward Scheme)

This scheme allows the dxDAO to pay out ETH or tokens and to distribute Reputation (voting power).

### 4.4.4 Stewardship of the DutchX (DutchX Scheme)

This scheme allows the dxDAO to control the "Auctioneer Powers" of the DutchX trading protocol. This means that successful proposals have the ability to:

1. Change the threshold needed for tokens to be added to the trading protocol (by anyone), e.g. 1K equivalent in ETH and 1K equivalent in given token must be deposited to list a token on the trading protocol;
2. Change the threshold required for an auction to begin, e.g. 1K equivalent in ETH;
3. Add or remove tokens to the DutchX Token Whitelist (enabling trading such tokens to generate Magnolia (MGN));
4. Change the ETH/USD price feed;

5. Determine an entirely new entity able to modify the contract parameters (changing ownership of the “Auctioneer”);
6. Update the DutchX contract logic.

To learn more about the DutchX logic and auctioneer powers, see section 6.

#### **4.4.5 Stewardship of the dxDAO itself (DAO Admin Scheme)**

This scheme allows the dxDAO to register new schemes or remove existing schemes.

Put simply, this scheme allows the dxDAO to change its own rules in any way. An example would be to shorten or lengthen voting periods, by removing a scheme, updating its parameters, and then registering it again. An additional example would be, if the dxDAO decides to govern another protocol, registering (assigning ownership permissions to) a new scheme for interactions with that protocol.

#### **4.4.6 Governance Parameters of dxDAO Schemes**

Each scheme (outlined above) of the dxDAO will have initial governance parameters, which dictate how Reputation Holders may arrive at decisions. These governance parameters are variables within DAOstack’s Genesis Protocol, which can be customized and updated.

For example, the parameters for the Contribution Reward Scheme (outlined in the first column of the diagram below) have been chosen to allow for relatively fast decision-making ability. That is, regular proposals in the Contribution Reward Scheme timeout after 1.5 months while other dxDAO Schemes’ proposals timeout in 3 months. This decision to shorten parameters was made because it is fairly easy to evaluate proposals from the Contribution Reward Scheme.

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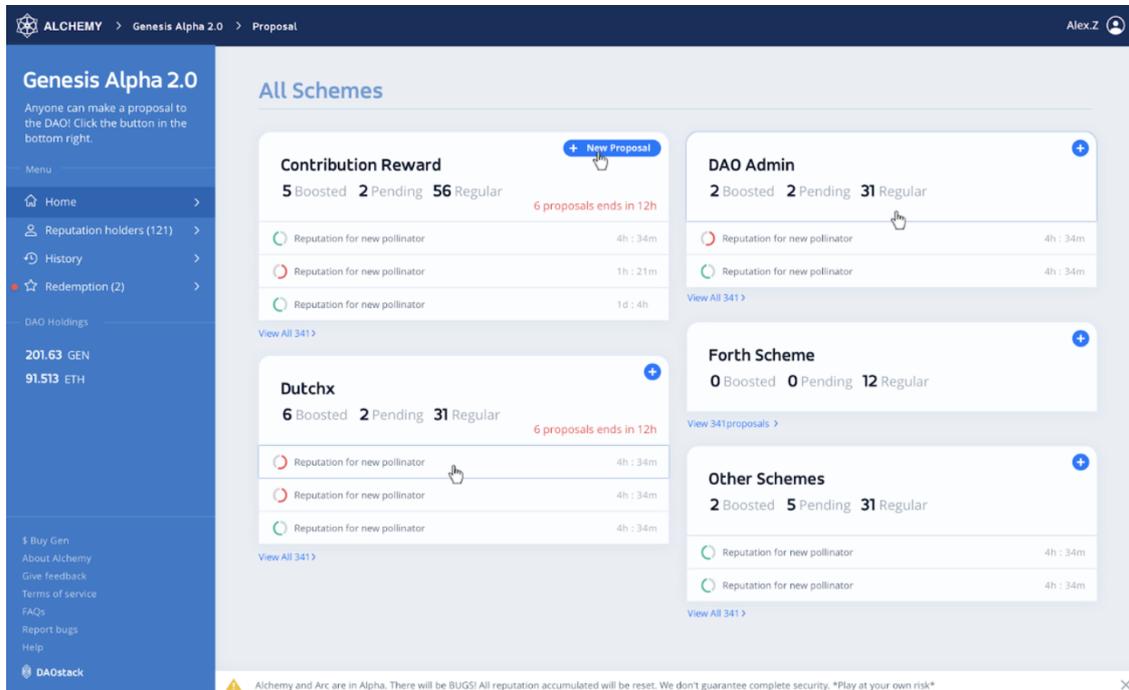
Parameter	Meaning in the dxDAO	DutchX Scheme	Contribution Reward Scheme	DAO Admin Scheme
Non-boosted quorum	The percentage of voting power required to instantly accept a proposal	> 50%	> 50%	> 50%
Non-boosted voting period	How long a non-boosted proposal stays open for voting	3 months	1.5 months	3 months
Boosted voting period	How long a boosted proposal stays open for voting	2 weeks	1 week	2 weeks
Pre-boosted period	How long a proposal on its way to being boosted stays open for predicting	2 days	1 day	2 days
Boosting threshold constant	Controls how quickly the boosting threshold goes up as the number of boosted proposals goes up. Must be greater than 1. The larger it is, the fewer boosted proposals the dxDAO will have.	1.3	1.2	1.3
Quiet Ending period	If the dxDAO's decision on a boosted proposal changes in this final period of time, another period this long gets added to the voting period. The longer it is, the harder it is to steal a vote by waiting until the last minute.	4 days	2 days	4 days
Proposer reward constant	The amount of Reputation given to Proposers of accepted proposals.	2000 Reputation	500 Reputation	1000 Reputation
Pre-boost voting Reputation stake	Voters who vote on a proposal before it is boosted risk losing this percentage of their Reputation if their vote goes against the eventual majority. If their vote is with the majority, they gain a portion of the Reputation lost by those who were penalized.	0.04% Reputation	0.04% Reputation	0.04% Reputation
Minimum DAOstake	The minimum amount of GEN the dxDAO automatically stakes that every proposal will fail. This helps incentivize predictions.	1000 GEN	250 GEN	500 GEN
DAOstake coefficient	Affects the automatic dxDAO down-stake (DAOstake) size.	0.1	0.1	0.1
Locking period	Only for automatic Reputation distribution (unrelated to the locking periods during the Vote Staking Period)	2 days	1 day	2 days

## 4.5 Alchemy Earth Interface

The dxDAO can be accessed via a user interface designed by DAOstack to provide greater usability for interaction and participation in DAOs built on their framework. In Q2 2019, DAOstack will release a

version 2.0 of their interface known as Alchemy Earth.

Alchemy Earth is the latest version of Alchemy, a platform to make collaborative decisions about budgeting, policy, and anything else necessary for their organization. There are three basic actions the platform allows: proposing, voting, and predicting. Together, these actions make up the bulk of a DAO's decision-making activity.



The Alchemy Earth interface featuring all three initial dxDAO schemes.

For an overview of how to propose, vote, and predict using the Alchemy Earth interface, visit this tutorial.

## 4.6 Exemplary Proposals

The dxDAO can take any action within the capabilities of existing Ethereum and web 3.0 infrastructure, plus some advanced privileges with regard to managing the DutchX trading protocol. The following are five proposals that could theoretically be proposed and executed via the dxDAO:

- **Buy an ENS domain to host a user interface for the DutchX trading protocol.**

The dxDAO could use allotted funds to submit a bounty to build a new user interface for the DutchX trading protocol. This interface could then be directed to an Ethereum Name Service domain in order to increase ease-of-use and accessibility to those looking to trade on the DutchX.

- **Run an additional phase of Reputation distribution.**

Someone could create and dxDAO Stakeholders implement a proposal launching a second phase of Reputation distribution. This proposal could vary widely depending on its parameters. Perhaps the newly-minted Reputation could only be allotted for those who have proven themselves most active in governance processes thus far. Or, only Ethereum addresses without Reputation score might be eligible. In this instance, the distribution mechanism is also variable, dictated by the author of the proposal. It may specify a similar mechanism available during the initial Vote Staking Period, such as locking ETH, or something else entirely.

- **Act as an arbitrator to resolve disputes.**

A proposal could also define new purposes for its governance and decision-making capabilities. One such purpose could be for the dxDAO to act as an arbitrator for an oracle platform like [realit.io](http://realit.io).

These platforms act as a source of truth for outcomes or answers to specific events or questions. However, sometimes the determination of the oracle is disputed and dispute resolution is required. The dxDAO could act in such an arbitral capacity—harnessing its body of Stakeholders to offer a resolution. For instance, questions whose answers are disputed and require resolution could be sent in the form of a proposal to the dxDAO. Then, Reputation Holders could vote the proposal up or down to resolve the dispute, and collect a reward for their services.

- **Veto for centralized upgrade mechanisms.**

In addition to acting in a legislative or judicial capacity—writing and voting on proposals—Reputation Holders could also make changes to the governance process itself. For instance, Reputation Holders could institute a variety of backstop measures. If a proposal was accepted under certain conditions which were determined to be inadequate, such as  $\geq 5\%$  Reputation Holder participation, the proposal could automatically be vetoed, postponed, or declined by the governance parameters.

- **Propose a social contract or manifesto.**

dxDAO Stakeholders aren't limited to the aforementioned hard governance proposals—that is, ones that make a specific and concrete change to a core protocol or system feature. dxDAO Stakeholders could also propose and vote on soft governance measures that establish common values, best practices and self-governance behaviors—not dissimilar to a constitution or founding document.

## 5 How to participate

### 5.0.1 Timeline

There will be a 30-day initialization process, called the Vote Staking Period, during which participants can earn Reputation (voting power) in the dxDAO. Anyone can earn Reputation in four categories, through mechanisms designed to achieve a large degree of decentralization amongst dxDAO Stakeholders. After the Vote Staking Period, the actual governance phase begins. In the open-ended governance phase, the dxDAO has full autonomy—over its processes and the assets it controls.

Gnosis Ltd (“Gnosis”) is involved in the development of the dxDAO but will fully step back before the launch of the dxDAO. In this vein, there will be no pre-allocation of Reputation (voting power) in the dxDAO. Instead, participation is open to everyone. The dxDAO will either develop its own life and identity independently—or perish.

Below the different methods to participate in the dxDAO are outlined. For a guided walkthrough to earn voting power, visit the tutorial.

### 5.1 Reputation

The dxDAO is built on DAOstack, and Reputation is the intrinsic DAOstack voting power signifier. Reputation is not a standard token: it is non-transferable across wallets, i.e. it attaches to one specific wallet address, and confers voting power to its holders in a specific DAO. The more Reputation held, the greater one's voting power. The voting power of each Reputation Holder is weighted by this amount in proportion to the overall amount of Reputation (1 Million at the start).

### 5.2 Vote Staking Period to earn Reputation

The dxDAO Mainnet launch is planned for May 29, 2019. Follow #dxDAO on Twitter for updates. The dxDAO launch begins with a 30-day Vote Staking Period to earn Reputation (voting power) in the dxDAO.

During the Vote Staking Period, there are four categories by which you can earn initial Reputation (voting power) in the dxDAO, which are detailed in section 5.4.

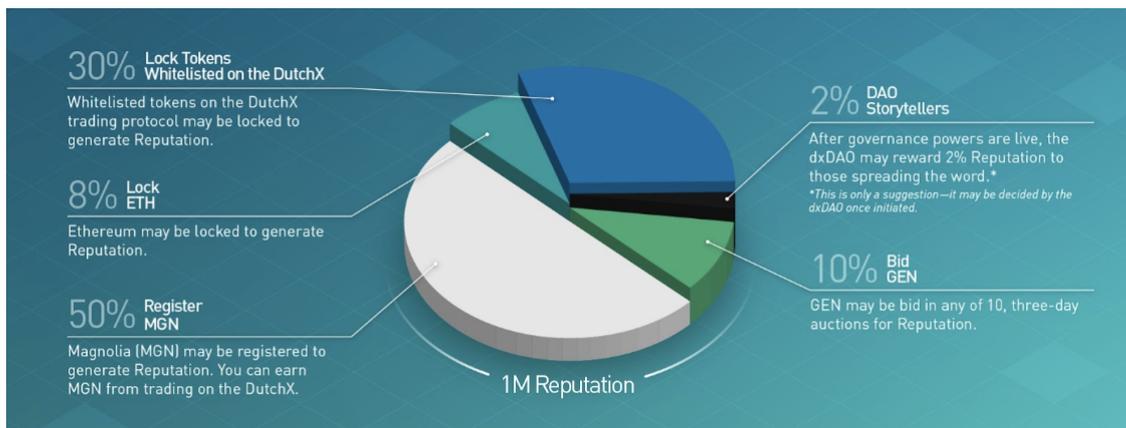
For greater detail on Reputation's governance function, see section 4.1 on DAOstack's Holographic Consensus.

### 5.3 Governance phase

The governance phase begins after the Vote Staking Period, with a 2-week freeze in-between. In the governance phase, the governance powers—including making proposals, voting, predicting, and upgrading the dxDAO itself—are activated. The Alchemy Earth interface designed by DAOstack is set to be live. To learn more about the Alchemy Earth interface, see section 4.5. Participants can use their Reputation to vote on proposals, and the dxDAO is fully controlled by the community stakeholders.

#### 5.3.1 Distribution

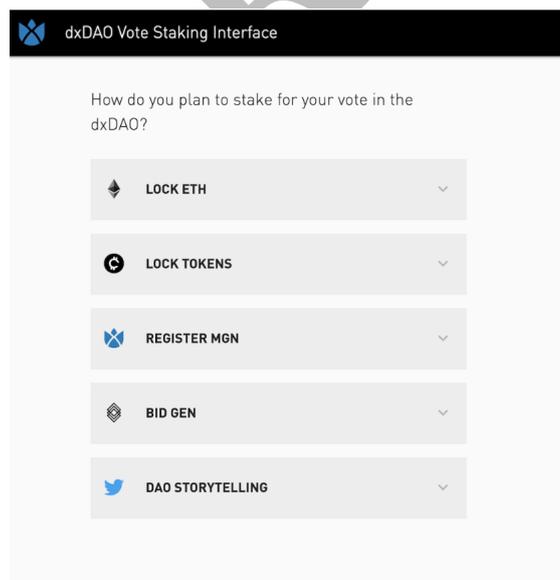
Initially, there will be 1 million Reputation (voting power) available. 98% (980K) of this initial Reputation can be earned during the Vote Staking Period using any of the four methods outlined in section 5.4. The remaining 2% (20k) of the initial Reputation will be awarded by the dxDAO during the governance phase. It is suggested—but up to the dxDAO to decide—that the 2% of the unallocated initial Reputation be awarded to “DAO Storytellers,” those who promote the dxDAO.



Initial Reputation Distribution during the Vote Staking Period.

### 5.4 Methods of Staking

These are the categories by which you can stake for your vote.

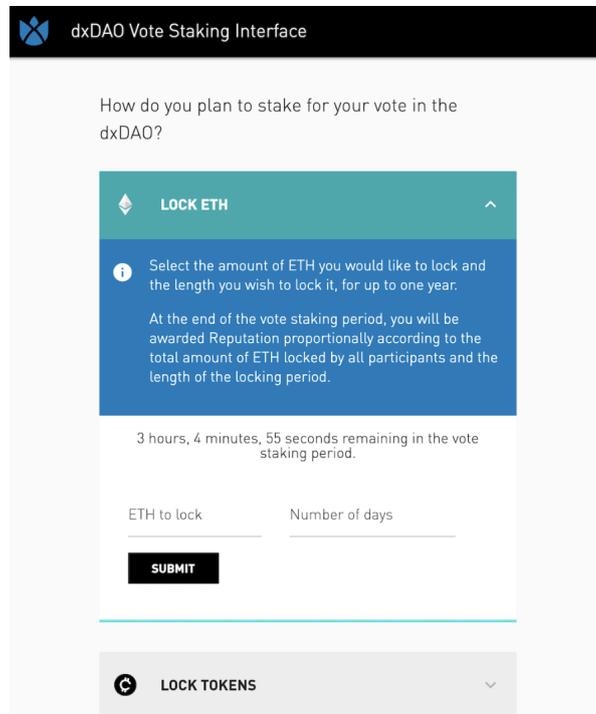


All categories displayed on the Vote Staking interface.

### 5.4.1 Lock ETH

To earn Reputation, you can lock Ether (ETH). Locking tokens is an opportunity cost, i.e. you can't use locked ETH in transactions or in any other function for the period they are locked. However, you do not have to spend ETH to participate in this category.

In total, 8% (80k) of the initial Reputation will be distributed to those who lock ETH.



Lock ETH category displayed on the Vote Staking interface.

On the Vote Staking interface, you may enter the amount of ETH to lock and the number of days of the locking period. There is no minimum locking duration; the maximum locking duration is 365 days. A personal Reputation Score for locking your ETH is calculated as:

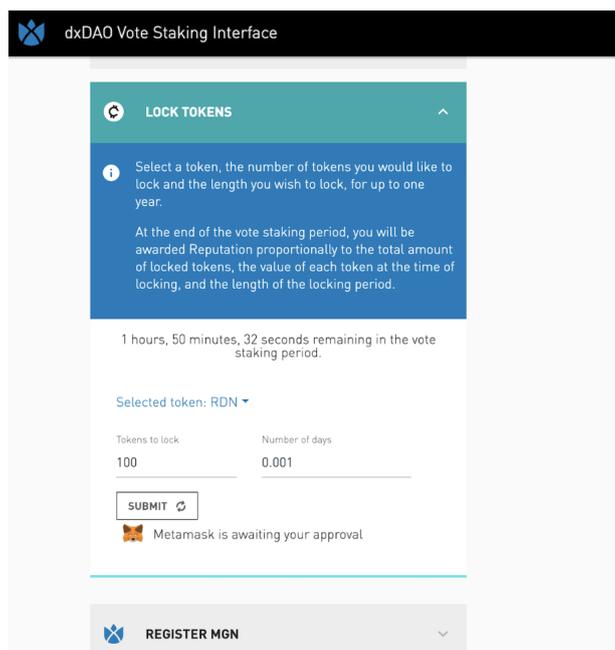
$$\text{Amount of ETH} \times \text{Locking Duration in Days}$$

At the end of the Vote Staking Period, you will be awarded part of the 80k Reputation allocated for this category based on your Reputation Score in proportion to the sum of the scores of all participants in this category. You must return to the Vote Staking interface to release your locked ETH after your specified locking duration is over.

### 5.4.2 Lock Tokens Whitelisted and Traded on the DutchX

To earn Reputation, you can lock tokens whitelisted and traded on the DutchX trading protocol. Locking tokens is an opportunity cost. You do not have to spend tokens to participate in this category. To learn more about the DutchX Token Whitelist, see section 6.4.

In total, 30% (300k) of the initial Reputation will be distributed to those who lock tokens whitelisted on the DutchX.



Lock tokens category displayed on the Vote Staking interface.

On the Vote Staking interface, you may enter the amount of tokens you would like to lock and duration of the locking period. There is no minimum locking duration; the maximum locking duration is 365 days. A personal Reputation Score for locking your tokens is calculated as:

$$\text{Amount of token} \times \text{Locking duration in days} \times \text{Price of token at the time of lock}$$

At the end of the Vote Staking Period, you will be awarded part of the 300k Reputation based on your score in proportion to the sum of the scores of all participants in this category.

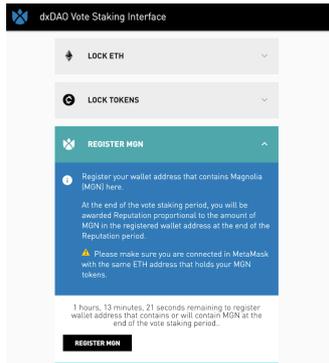
Your currently locked tokens (“Active Lock(s)”) will be displayed on the Vote Staking interface. You must return to the Vote Staking interface to release your locked tokens after your specified locking duration is over.

The price of the token at the time of locking will be determined by the DutchX trading protocol price oracle. Important: If there is not sufficient liquidity for a given whitelisted token on the DutchX protocol, you cannot lock the token at that point in time. You may try again at a later time, choose another token, or provide liquidity for the given token. To provide liquidity for a token on the DutchX, you may currently trade on slow.trade (<https://slow.trade>), Fairdex (<https://fairdex.net/>), or through the DutchX command line interface (see Available DutchX Interfaces section ).

### 5.4.3 Register Magnolia (MGN)

For an overview of what Magnolia (MGN) is and how it can be earned, see section 6.2.

Earning Reputation through registering MGN operates differently than locking ETH or other tokens. You do not need to lock MGN, but simply register it. To do so, you may register your wallet address which contains or will contain MGN on the Vote Staking interface.



Register MGN category displayed on the Vote Staking interface.

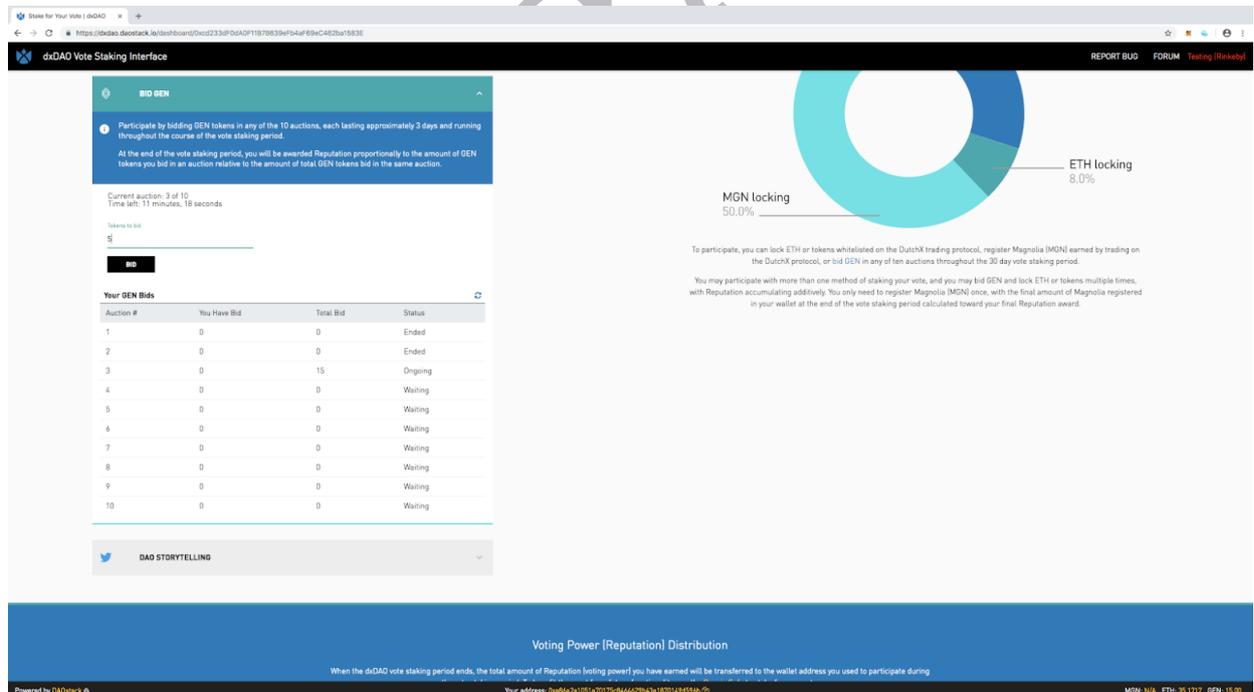
In total, 50% (500k) of the initial Reputation will be distributed to those who register MGN. You will be awarded Reputation based on the amount of MGN in your registered wallet address just prior to the beginning of the last 24 hours of the Vote Staking Period in proportion to the sum of the scores of all participants in this category. This means that where MGN is added in the last 24 hours of the Vote Staking Period to your registered wallet address, those MGN will not be considered for purposes of allocating Reputation to you.

To emphasize, only registered wallet addresses containing MGN during the last 24 hours of the Vote Staking Period will be awarded Reputation, though you can register your wallet address at any time during the 30-day Vote Staking Period. Having MGN does not automatically generate Reputation; the wallet address must be registered.

#### 5.4.4 Bid GEN in Auctions

To earn Reputation, you can bid GEN tokens in any one, more or all of 10 consecutive auctions, each lasting approximately 3 days and running throughout the course of the Vote Staking Period. You can only participate in the current auction. The bid GEN are not refundable.

GEN is the native DAOstack ERC20 token. GEN bid in these auctions will be added to the dxDAO's initial funding pool titled the Governance Subsidy (see glossary 9).



Bid GEN category displayed on the Vote Staking interface.

In total, 10% (100k) of the initial Reputation will be distributed to those who participate in this category. Each auction will have a fixed 1% of initial Reputation (10K) for sale. At the end of the Vote Staking Period, you will be awarded Reputation according to the amount of GEN tokens you bid in an auction in proportion to the total amount of GEN tokens bid in the same auction.

#### 5.4.5 DAO Storytellers

2% of the initial Reputation will not be distributed via the Vote Staking Period. The dxDAO will collectively decide on how to distribute the unallocated 2% of initial Reputation during the Governance Phase. It is suggested the unallocated 2% of initial Reputation be awarded to “DAO Storytellers”, those who promote the dxDAO. This is, however, up to the Reputation Holders at that point in time.

### 5.5 Advantages of using the Gnosis Safe Wallet

To participate in the Vote Staking Period, you should be able to use most Ethereum wallet providers. MetaMask and the Gnosis Safe are the only Ethereum wallets which have been tested on the Vote Staking interface.

The Gnosis Safe is the first mobile, smart contract-based wallet for ERC20 tokens, built on the secure and trusted Gnosis multi-signature contracts.

However, the Gnosis Safe provides significant advantages in functionality and extensibility. Standard Ethereum wallets function as “externally owned accounts” (EOAs) controlled primarily by one private key. The Gnosis Safe’s mobile version and browser extension provide multi-factor authentication, meaning that funds are still recoverable in the case of a private key being lost or stolen. Additional fund recovery options, including social recovery, are scheduled for upcoming releases on iOS and Android.

Additionally, the Gnosis Safe promises further advantages in extensibility. Since Reputation in the dxDAO is non-transferable, Reputation permanently belongs to its original wallet address. For standard Ethereum wallet holders, the wallet’s functionality is limited to its present day capabilities and further interactivity with the dxDAO is prohibited.

The Gnosis Safe’s core functionality can be extended at anytime, and future governance modules, allowing voting delegation or staking in futarchy markets, are on its roadmap.

It is also noteworthy to mention that the Gnosis Safe would also allow a Reputation Holder to prove that they no longer participate in the dxDAO, even without a proposal having been accepted to that effect.

## 6 The DutchX Trading Protocol

### 6.1 What is the DutchX?

The DutchX is a fully decentralized trading protocol for ERC20 tokens, based on the Dutch auction principle. It’s a set of smart contracts and a backbone structure for both interfaces and integrations utilizing the protocol. The DutchX’s auction format provides incentives for sellers and buyers to reach a price that is mutually beneficial. Bidders are incentivized by the decreasing price function to participate at their willingness to pay. Under this model they are ensured to receive the same or a lower settling price than their bid amount. Sellers also benefit from this bidding pressure because bidders are incentivised to participate as early as their willingness is reflected in the price, or otherwise, bidders may lose the opportunity to participate because the sell volume is bought.

More information relating to the DutchX can be found here and also in this series of blog posts.

### 6.2 Magnolia (MGN)

Magnolia (MGN) tokens are used to lower market participants’ Liquidity Contributions on the DutchX trading protocol. Liquidity Contributions do not go to an operator or owner, rather they are reinvested in the next auction of the token pairing to contribute liquidity, benefitting all traders who participate in the following auction. Instead of fees, the DutchX trading protocol levies Liquidity Contributions of less than or equal to 0.5% of a participant’s total trading volume.

Participants holding MGN tokens pay lower Liquidity Contributions, based on the percentage of the total volume of locked MGN tokens they hold. Further details on the Liquidity Contribution reduction model are available [here](#).

### 6.3 How to Earn Magnolia (MGN)

1 MGN (or a fraction thereof) is generated from trading the equivalent of 1 ETH of any whitelisted token on the DutchX trading protocol. MGN are inflationary as their creation is based on the volume traded on the DutchX. There is no mechanism in place to reduce the total MGN amount.

MGN are credited to the DutchX user by the time a trade is completed, and are locked by default and thus count towards the Liquidity Contribution reduction. You may unlock MGN at any point in time. After 24 hours since you were credited MGN, you may then trade them freely. They can be re-locked at any point in time. DutchX users cannot unlock a fraction of the MGN in a particular wallet but rather must unlock the entire MGN amount in that wallet.

### 6.4 DutchX Token Whitelist

Whitelisted Tokens are not the same as listed and traded tokens. A Whitelisted Token has the potential to generate Magnolia (MGN) tokens if it is traded in a whitelisted pair. In other words, tokens can be listed for trading on the DutchX protocol, albeit not whitelisted (and hence trading this token does not generate MGN).

The procured whitelist includes a list of projects we are familiar with and consider legitimate. In that respect the list is random. A legal assessment was conducted on the initial list based on the tokens' characteristics. The legal assessment looked at legislation of major jurisdictions to ensure that, to the best of our knowledge, the Whitelisted Tokens are not securities, financial instruments or equivalent and that customer due diligence procedures do not apply to them at this moment in time for the purposes of the DutchX. Tokens were weeded out based thereon. The pre-final token list was then compared with the tokens reviewed by a compliance exercise carried out by the Brooklyn Project (<https://theBKP.com/theBKP.com>) and Truset (<https://tokens-beta.truset.com/home>) and confirmed based thereon.

More information on the DutchX token whitelist is available in the documentation [here](#).

### 6.5 Technical Integration of the DutchX and dxDAO

The dxDAO will control the DutchX trading protocol through a system of proposals which are prioritized and voted on by Reputation Holders. This voting occurs via the Alchemy Earth user interface (see section 4.1). Proposals could theoretically make changes to any aspect of the DutchX's parameters (outlined in detail in section 4.4.4).

### 6.6 Advantages of the DutchX

#### 6.6.1 Patches Front-running Vulnerabilities

Decentralized exchanges are prime hunting grounds for front-running: the practice of exploiting market inefficiencies to make an unfair profit. Although centralized exchanges are certainly not immune to front-running, DEXs are particularly vulnerable because cryptocurrency miners can directly affect the order in which transactions are validated on the blockchain. This means that malicious miners could take advantage of advanced transaction knowledge to game the system, i.e., extracting rent from inefficiencies in the system.

One way to combat front-running is to use batch auctions. This eliminates the lag that front-runners need to profit, by settling all trades for a given auction period simultaneously. The DutchX trading protocol uses the batch auction format to ensure that traders receive a fair price for their token pairs. Notably, transactions are executed in discrete time intervals that cannot be exploited by front-runners. The DutchX's potential to eliminate front-running could make it the trading format of choice for decentralized assets.

## 6.6.2 Provides Critical Infrastructure to the DeFi Network

The DutchX trading protocol works fully on-chain and boasts the aforementioned resilience to front-running and market manipulation. Additionally, its auction mechanism finds a reliable price even for tokens that are not very liquid.

Such unique attributes strongly position the protocol as providing cryptoeconomic primitives—foundational building blocks—for DeFi (Decentralized Finance) networks. Most prominent examples of DeFi projects, such as MakerDAO or 0X, require:

- a) A reliable price feed that can trigger margin calls;
- b) A market mechanism for larger market orders in case of liquidation.

To fulfill these requirements, DeFi projects currently use either centralized options or otherwise offer a limited range of tokens. The DutchX trading protocol differs as it will offer fully decentralized options for these two crucial DeFi cryptoeconomic primitives.

## 6.7 Available DutchX Interfaces

### 6.7.1 DutchX Seller Interface

A Mainnet seller interface is available at [slow.trade](https://slow.trade). A Rinkeby Testnet version is available at [slow.trade/rinkeby](https://slow.trade/rinkeby).

On [slow.trade](https://slow.trade), the user takes part as a seller by depositing tokens into an auction. [slow.trade](https://slow.trade) displays the user's MGN balance attached to their address, which otherwise cannot be seen in the wallet as it is locked in a separate smart contract.

### 6.7.2 DutchX Bidder interface

A bidder interface is available at [fairdex.net](https://fairdex.net).

Participating as a bidder requires more active participation than as a seller. Bidders must be active when the auction price reflects their willingness to pay and determine their market participation strategy accordingly.

### 6.7.3 DutchX Command Line Interface (CLI)

For more technical users of the DutchX trading protocol, documentation on the CLI is available [here](#). The available CLI is token-agnostic.

### 6.7.4 DutchX Application Programming Interface (API)

The DutchX API documentation for Mainnet is available [here](#), and for Rinkeby Testnet it is available [here](#).

The API is read-only and returns a set of auction details. It is directly linked to the blockchain, except for the token symbol, which shouldn't be used for querying: always use a token address!

The API is token-agnostic.

## 7 Intrinsic Funding

One of the functions of the dxDAO may be to fund proposals that have been approved by Reputation Holders. Subject to various legal concerns to be evaluated by Reputation Holders when considering proposals, the following is a non-exhaustive list of funding methods that could be implemented.

### 7.1 Add a fee to the DutchX

The DutchX smart contract currently collects a Liquidity Contribution from sellers' and bidders' trading volume that is reinvested in next auction of the token pair.

A way for the dxDAO to collect funds is by accepting a proposal that changes the parameters of the DutchX smart contracts so that collected Liquidity Contributions—rather than being reinvested in the

next auction of the token pair—become fees that can be used to fund approved proposals. Alternatively, such a proposal could leave the Liquidity Contributions in place, but still implement an additional fee.

## 7.2 Fees from Oracle/dispute resolution services

A dxDAO proposal could also define new purposes for its governance and decision-making capabilities. One such purpose could be to act as an arbitrator for an oracle platform like [realit.io](#). See Exemplary Proposals section 4.6 for further details.

## 7.3 Token Sale

A way for the dxDAO to raise funds is through a token sale. An ERC20 token, or a token with a different standard, could be created and the funds raised be used to fund proposals that require capital.

A token sale may also take other forms that could incentivize a better use of the capital raised. As an example, the minted token could function as a governance or voting token to decide how the funding is administered, or as a utility token that fulfils a specific function of the proposal itself.

## 7.4 Continuous Organization

Continuous Organizations' funding mechanism may provide a promising alternative to token sales. As envisaged, Continuous Organizations implement a bonding curve smart contract, one that automatically controls the supply of the organization's intrinsic tokens—through minting, burning, and distributing based on market interest. The bonding curve contract regulates cash flows for required organizational funding, and the surplus funds are deposited in a buyback fund that provides a price floor and upward drift (in price) for the organization's token. A dxDAO proposal could implement such a funding structure.

# 8 Risks

DAOs are uncharted territory and highly experimental. They contain a number of potential risks.

There are technical risks that smart contract systems might not work as expected. As such, and although all efforts have been made that no such instances arise (as further outlined in section xx), hackers may exploit bugs to drain the dxDAO's funds or to otherwise thwart the intended functioning of the dxDAO; locked tokens may get stuck in the dxDAO's Vote Staking Period smart contracts.

Governance processes including DAOstack's Holographic Consensus and its game theoretic underpinnings, remain largely untested. There are risks that the chosen governance processes can and are gamed and enforce proposals that disadvantage specific participants or otherwise thwart the envisaged functioning of the governance process.

While we see the dxDAO similar to heterarchical networks like Bitcoin and Ethereum where network participants do not become jointly and severally liable for the obligations of the network, other legal conclusions are possible. As DAOs do not (yet) enjoy legal personality in various jurisdictions, Reputation Holders may potentially be considered jointly and severally liable for the dxDAO's actions and obligations. Various efforts are currently being made to limit the liability of Reputation Holders and this whitepaper will be updated accordingly.

## 8.1 Audits

Security is a main priority for any codebase used in the dxDAO. Both Gnosis and DAOstack have had external teams perform audits of all the smart contracts used for this project. You can find detailed information on the audits in the following links:

## 8.2 DutchX Audits

- Summary of audit by Solidified on the 2.0 release of the DutchX smart contract
- Summary of audit by Solidified covering a price oracle sourced from the DutchX

### 8.3 DAOstack Audits

- Security audit of DAOstack’s Smart Contracts by Chain Security
- Blogspot summary of the Chain Security audit

### 8.4 Bug Bounty Program

To minimize risk and identify potential vectors of attack we launched several bug bounty programs before the dxDAO Vote Staking Period. The bug bounty payouts for hackers focus on two major attacks:

1. Gaining access to ETH or ERC20 tokens in locking contracts;
2. Breaking the dxDAO, either by accepting a decision or draining its funds against a majority vote.

More information about the bug bounty program announcement can be found [here](#).

The first round of the bug bounty program proved effective. On February 8th, an anonymous report disclosed a bug in the test dxDAO codebase. The bug allowed an attacker to delete any proposal made by the dxDAO before it can pass. An explanation of the bug, and the fix, can be reviewed on [Github](#).

More information about the second round of the dxDAO bug bounty program can be found [here](#) and the dxDAO Github can be found [here](#).

## 9 Glossary

- *Alchemy Earth*: A version 2.0 user interface developed by DAOstack that allows participants to submit, view and vote on proposals on DAOstack DAOs. The front-end of the dxDAO.
- *Boosting/ Boosted Proposals*: Boosting is the process and result of a Prediction Challenge in which GEN holders predict whether or not a given proposal will be accepted. If a proposal is boosted (predicted to be accepted), it will be accepted if it receives a relative majority, that is, more Reputation votes in favor of the proposal than against it. There is a shorter voting period for Boosted Proposals, and such proposals appear at the top of the interface. This means that Boosted Proposals have a lower barrier to being accepted than Non-Boosted Proposals.
- *DeFi*: Decentralized finance applications.
- *DutchX*: The DutchX is a fully decentralized trading protocol that uses the Dutch auction mechanism to provide a fairer price for tokens with uniform auction clearing prices. Designed by Gnosis.
- *dxDAO Stakeholders*: Persons participating or interested in participating in the governance processes of the dxDAO including but not limited to Reputation Holders, Predictors and Proposers.
- *GEN*: DAOstack’s native token. Used to participate in the Prediction Challenge on proposals, thereby capable of incentivizing voting and prioritizing proposals on all the DAOs built on the Genesis Protocol, including the dxDAO.
- *Genesis Protocol*: A governance framework conceptualized and developed by DAOstack that maximizes scalability and resilience of large (1000+ stakeholder) organizations using incentive design referred to as Holographic Consensus.
- *Governance Subsidy*: Refers to the intrinsic funding pool available to the dxDAO. This funding pool subsidizes Prediction Challenges and can also be used, for example, to reward accepted proposals.
- *Holographic Consensus*: An incentive design mechanism of DAOstack’s governance framework (Genesis Protocol) that manages and directs an organization’s collective attention, aiming to create organizations that are actually more efficient the greater their scale.
- *Liquidity Contribution*: Instead of fees, the DutchX trading protocol reinvests less than or equal to 0.5% of trading volume from participants into the next auction of the same token pair to create a more liquid, well-functioning market.

- *Predictors*: Those who participate in the Prediction Challenge, helping filter proposals and directing the attention of Reputation Holders to those that are in line with the majority values of the dxDAO. Predictors are driven by making profits from the Governance Subsidy or from other participants that make incorrect predictions.
- *Prediction Challenge*: Each dxDAO proposal has an associated Prediction Challenge, where dxDAO Stakeholders can Upstake (predict for), or Downstake (predict against) proposals using GEN. If the stakeholder correctly predicts that a proposal will be accepted, they are rewarded in GEN. If they fail to predict the correct outcome, the GEN they used will go to those Prediction Challenge participants that predicted correctly. The Prediction Challenge is independent from the voting process.
- *Proposer*: Anyone can create a proposal for the dxDAO without cost, apart from Ethereum transaction fees. The dxDAO will automatically allocate Reputation to the person's Ethereum wallet address that submits accepted proposals.
- *Quiet Ending*: To avoid finalization attacks, the effective decision cannot be changed in the ending interval. This means that, for example, if on the last day of opening the majority vote changed from accepting to rejecting a proposal (or vice versa), the time period during which Reputation Holders can vote interval is extended by another day. The vote is closed only once there is no change of decision during the ending interval of time periods for voting. The ending interval, or Quiet Ending, is set as a DAO governance parameter.
- *Reputation*: Reputation is non-transferable, attaching to a specific Ethereum wallet address, and grants voting power in the dxDAO. The greater amount of Reputation one holds, the greater their voting power.
- *Reputation Holders*: A person whose Ethereum wallet address contains an amount of Reputation.
- *Reputation Score*: In this whitepaper, the Reputation Score indicates how earned Reputation is calculated during the Vote Staking Period. The Score is evaluated in competition with other participants by category in the Vote Staking Period and determines but does not equal the actual amount of Reputation earned.
- *Vote Staking interface*: The website on which anyone participate in the Vote Staking Period when live. Available at <https://dxdao.daostack.io>.
- *Vote Staking Period*: A one-month period planned to begin May 29, 2019, during which initial Reputation and thus voting power within the dxDAO can be earned.
- *Whitelisted Tokens*: Tokens that can be traded to generate Magnolia (MGN) on the DutchX trading protocol. More information on the selection is available here.
- *Schemes*: Schemes define the functionality of a DAO powered by DAOstack. Each scheme allows a DAO to do specific actions under specific conditions. In the dxDAO, there are three schemes, which oversee respectively:
  - Contribution Reward;
  - DutchX;
  - DAO Admin.
- *Upstake*: Participating in the Genesis protocol Prediction Challenge, by using GEN tokens to predict a proposal will be accepted.
- *MGN*: Magnolia (MGN) is an ERC20 token generated from trading Whitelisted Tokens on the DutchX protocol. 1 ETH equivalent of trading volume generates 1 MGN (or a fraction thereof).

## References

- [1] Gnosis - Introducing the dxDAO, <https://blog.gnosis.pm/introducing-the-dxdao-27ec4301eced>
- [2] Gnosis - A Discussion of the Protocol Governing the dxDAO, <https://blog.gnosis.pm/a-brief-discussion-of-the-protocol-governing-the-dxdao-7331407a2555>
- [3] Gnosis - 2019 is the Year of the DAO, <https://blog.gnosis.pm/2019-is-the-year-of-the-dao-5a428f90fb55>
- [4] Gnosis - Security Update on the dxDAO Bug Bounty, <https://blog.gnosis.pm/security-update-on-the-dxdao-bug-bounty-52cec0f02cde>
- [5] DAOstack - White Paper, <https://daostack.io/wp/DAOstack-White-Paper-en.pdf>
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